

H2ero Net Zero

Hydrogen Europe Position Paper on the “Fit for 55 Package”

June 2021



Hydrogen has seen unprecedented development in the year 2020. From innovative niche technology, it is fast becoming a systemic element in the European Union's (EU) efforts to transition to a climate-neutral society in 2050. It will become a crucial energy vector and the other leg of the energy transition – alongside renewable electricity – by replacing coal, oil, and gas across different segments of the economy. The rapid development of hydrogen is important for meeting the EU's climate objectives and preserving and enhancing the EU's industrial and economic competitiveness, securing jobs and value creation in this high-tech sector.

Europe is currently leading in hydrogen technology, and European companies and knowledge institutions can be instrumental in advancing technological developments and industrial scale-up. It is imperative that Europe maintains this leadership position and seizes the current momentum for hydrogen technologies. The EU is well placed to become the birthplace of a global hydrogen economy denominated in Euro currency.

It is time that hydrogen moves from an afterthought to a central pillar of the energy system. The “Fit for 55 Package” presents a unique opportunity to begin putting into place a concrete and fit for purpose framework for the development of a clean hydrogen economy. In this paper, you will find Hydrogen Europe's recommendations on how hydrogen can:

- Unleash the potential of renewables.
- Bring “efficiency” to the energy “system” of the future.
- Enable a carbon-neutral transport system.

Key recommendations

- Revise renewable energy targets upwards in line with the 2030 target plan to facilitate faster decarbonisation and additional renewable sources.
- Consider specific sub-targets for hard to abate sectors (e.g., steel production, aviation and maritime) to incentivise further and speed up deployment and adoption of renewable energy in specific sectors and industrial segments.
- Create a Trackable, Traceable, Tradeable, Transparent^[1] & Trustworthy Guarantees of Origin (GO) system, with hydrogen as a distinct energy carrier separate from electricity and gas.
- Uphold the principle of “energy system efficiency” alongside the “energy efficiency first” principle.
- Include road transport and maritime under the ETS and restructure energy taxation by reducing fossil fuels subsidies, eliminating double taxation, and granting fiscal rewards to those investing in clean energy technologies. This is central to establishing a robust carbon reduction system.

[1] A parallel framework to promote the role of low carbon fuels and gases should be dealt with in the context of the upcoming Hydrogen and Decarbonisation of Gas Package (expected Q4 2021).

- Promote the allocation of emission premiums to upskilling, reskilling and hydrogen refuelling station deployment.
- Foster close synergies between the Directive on Alternative Fuels Infrastructure (DAFI) and the revised proposals on Trans European Networks for Energy (TEN-E) and Trans European Networks for Transport in particular.
- Ensure DAFI reflects the multi-faceted solutions that hydrogen technologies can bring to the transport sector's decarbonisation such as multipurpose hydrogen refuelling stations at strategic locations that could serve for different transport applications e.g., at airports and ports.

Unleashing the potential of renewable energy with hydrogen

Amendment of the Renewable Energy Directive (RED)

- The RED should focus on the promotion of renewable energy only^[1].
- Renewable energy targets should be revised upwards in line with the 2030 target plan to facilitate faster decarbonisation and additional renewable sources.
- The fuel obligation (Art. 25) should be revised upwards significantly and be underpinned by a specific dedicated target for Renewable Fuels of Non-Biological Origin (RFNBOs) in the transport sector.
- Sub-targets for hydrogen/RFNBOs and multipliers are essential to (i) incentivise the uptake of renewables in the energy system and (ii) close the financial gap between the cleaner yet more expensive option and its cheaper fossil alternative for end-customers. A revised RED should:
 - o Set multipliers for hydrogen to bring hydrogen onto a level playing field with other technologies receiving incentives under the RED.
 - o Create an integrated framework where supply and demand instruments are aligned and mutually reinforcing. Sub-targets in transport will result in an obligation to produce RFNBO and create a "push" in supply. In an emerging market, multipliers will create a stronger demand for RFNBO relative to the fossil alternative and create a "pull" effect.
 - o Consider specific sub-targets for hard to abate sectors (e.g., steel production, aviation and maritime) to incentivise further and speed up deployment and adoption of renewable energy in specific sectors and industrial segments. It is important to avoid duplication of efforts; as such, if specific sectoral targets - e.g., in industry, maritime or aviation - are proposed within the context of RED revision, they should always be coherent with more specific and targeted sectoral legislative initiatives, e.g., RE Fuel Maritime or RE Fuel Aviation.

- Regulatory barriers imposed by the Delegated Act related to the criteria for additionality, geographic and temporal correlation must be tackled. The requirements are precluding investors from financing projects aiming to replace carbon-emitting energy carriers with renewable hydrogen:
 - o Consider providing an exemption from proving additionality to RFNBO producers until 2025.
 - o In 2025, the Commission and relevant stakeholders should assess progress towards meeting the 2024 6GW and 2030 40GW target of the H2 strategy.
 - o Member States (MS) should bear responsibility for providing additional renewable electricity (RE) capacity by setting dedicated RE targets to be used for RFNBO production.
 - o RFNBO producers should be allowed to produce renewable hydrogen from curtailed renewable electricity.
 - o Accept Guarantees of Origin alongside Power Purchase Agreements (PPAs) to prove the renewable character of the electricity used in hydrogen production.
 - o Acknowledge that renewable hydrogen creates demand exclusively for renewable energy, not for fossil-based power. All renewable hydrogen producers need to prove the origin of renewable sources.
- A Trackable^[2], Traceable^[3], Tradeable, Transparent^[4] and Trustworthy Guarantees of Origin (GO) system should be created, with hydrogen as a distinct energy carrier separate from electricity and gas. In addition, clear guidelines for the book and claim system are necessary to ensure accountability when hydrogen is blended.
- Create a GO system to address international governance of hydrogen imports and exports. Europe will require imports of hydrogen and hydrogen derivatives, thus necessitating a globally functioning system of assessing the carbon content of the molecules and sustainability criteria. GOs can serve to certify the quality of imported hydrogen or hydrogen products such as renewable ammonia.
 - o The EU should initiate the development of a global system for Hydrogen Guarantees of Origin (HGOs), with track-and-trace and auditing functionality. Companies or countries that want to export their hydrogen to the EU need to be able to redeem HGOs that are approved and validated by an EU body at the EU point of entry.

[2] Where does it come from?

[3] Where does it go.

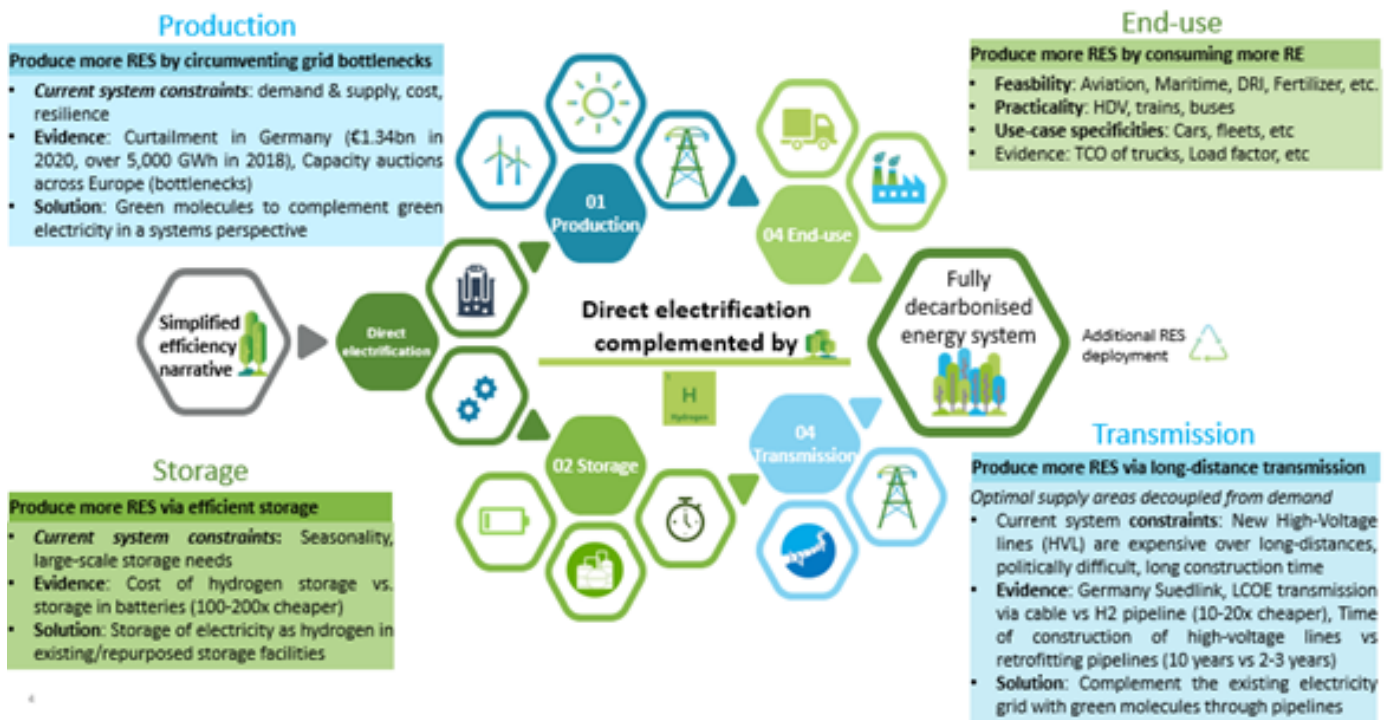
[4] With digital information.

Promoting the principle of “energy system efficiency” alongside the “energy efficiency first principle.”

Amendment of the Energy Efficiency Directive (EED)

- In the future energy system, renewable energy producers will be faced with an important choice: to deliver renewable energy as electricity or as hydrogen. An essential factor in this decision for both renewable energy producers and policymakers will be the effect of this choice on energy efficiency.
- Renewable electricity is not an input; it is an output generated by infrastructures such as wind farms and solar panels[5]. A static, single pathway view on energy efficiency is oversimplified and runs the risk of neglecting the bigger picture of the future integrated and climate-neutral energy system in 2050. Hydrogen will have a crucial role in delivering system efficiency. This is why it is important to promote and develop the principle of “energy system efficiency” alongside the “energy efficiency first” principle.
- Hydrogen provides a mechanism to flexibly transfer energy across sectors, time, and place in a more circular energy system. The advantages of the production of hydrogen, in complement to electrification, can be found across the entire value chain of renewable energy, from production to its storage and transport and its end-use in multiple consuming sectors. These are summarised below:
 1. **Production:** Hydrogen allows the production of more renewable energy with the same resources by using suitable locations and at times when it is most efficient to do so. Moreover, hydrogen allows for the installation of more renewable energy generation without being constrained by the capacity limitations of electricity grids.
 2. **Transport:** Hydrogen is dispatchable via different means of transport and infrastructures (via pipeline, via ship, via truck, et cetera), which facilitates cost-efficient transport of renewable energy, including across long distances.
 3. **Storage:** Variable renewable electricity is hard to store. Hydrogen brings flexibility to the energy system via large scale, seasonal storage, avoiding costly and inefficient curtailment of renewable electricity. In other words, hydrogen allows the production of more renewable energy with the already installed capacity.
 4. **End-Use:** Hydrogen increases the use of renewable energy sources by unlocking new business and commercial opportunities for renewable power producers. By producing hydrogen, renewable power producers can tap into hard-to-electrify sectors such as heavy industry and heavy-duty transport and any other sectors for which electrification is impossible, impractical, prohibitively expensive, difficult due to scale-up.

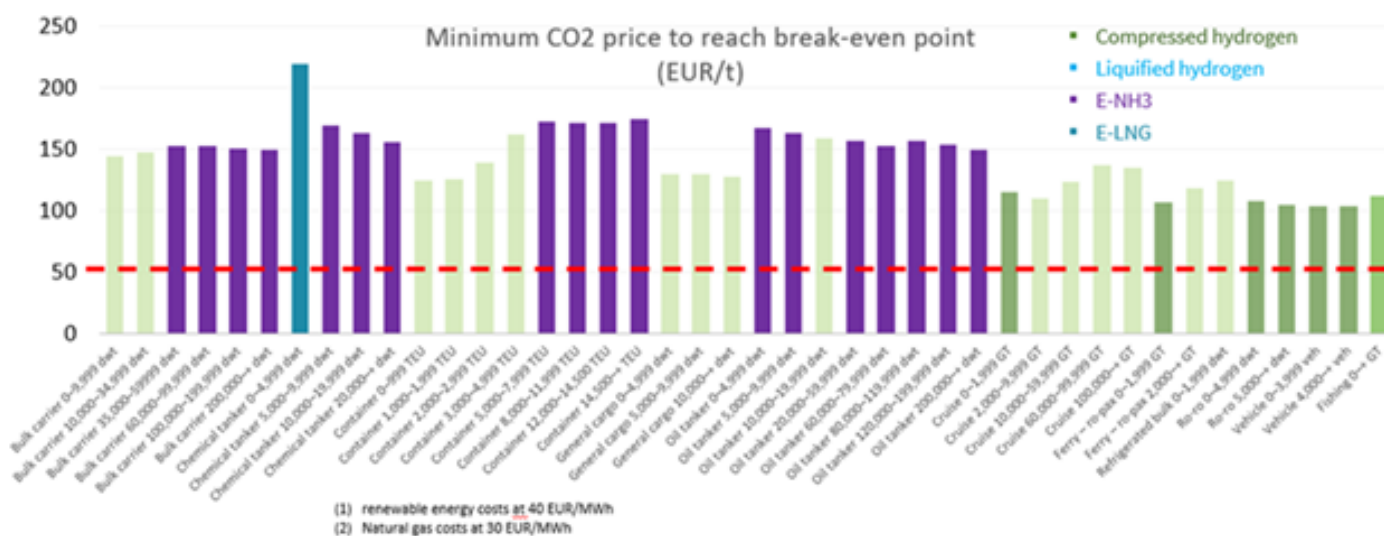
[5] If one considers renewable electricity as an input, electrification will always require less energy than the use of hydrogen if one looks at energy flows only in terms of single, static, one-way pathways e.g., Renewable Energy Source (RES) to grid, RES to batteries, RES to heat-pump.



Reforming carbon markets by means of progressive carbon pricing in the ETS and Energy Taxation Directive (ETD) lays the foundation of hydrogen ramp up and shift to cleaner solutions

- Introduce a higher Linear Reduction Factor (LRF) combined with a one-off reduction (rebasin) of the ETS baseline to address the structural excess of allowances and ensure that the overall ETS allowance cap better reflects the actual emissions.
- Gradually extend the ETS to new sectors to incentivise a shift to cleaner alternatives. For the ETS to become a more impactful tool incentivising decarbonisation and clean hydrogen competitiveness and rollout, it needs to cover sectors currently exposed to no CO₂ pricing, e.g., maritime and/or insufficient CO₂ pricing, e.g., buildings. We underline the need to set up robust monitoring, reporting and verification (MRV) systems for new sectors.
- The Innovation Fund and the Modernisation Fund should be strengthened by setting aside a larger share of ETS allowances used for mobilising the financing. The EU Innovation Fund plays a key role in supporting immature low-carbon technologies before they become commercially available. To accelerate the development of new innovative low-carbon technologies in the energy and industry sectors, the volume of EUAs set aside for this purpose should be increased.

- The ETS must be preserved as an efficient tool to reduce carbon emissions across the EU. However, in addition to the national RES and EE policies and schemes to fulfil those objectives, some MSs implement national measures aimed at specific carbon abatements in their territories so far not delivered by the ETS (e.g., subsidies for early decommissioning of coal plants; subsidies for CCS; Carbon Contracts for Difference; et cetera), with a significant impact on the ETS. Due to the varying CO₂ avoidance costs among the sectors, it is important to complement the EU ETS CO₂ price with sectoral legislation such as with quotas, targets, and refinancing mechanisms.
- Carbon Contracts for Difference offer the opportunity to guarantee investors in innovative climate-friendly technologies and practices a fixed price that rewards CO₂ emission reductions above the current price levels in the EU ETS, thus levelling costs on the demand side.
- Hydrogen Europe supports the inclusion of road transport into a separate ETS system. In addition, we consider that revenues should be earmarked towards alternative fuels and hydrogen refuelling infrastructure.
- Maritime should be brought into the ETS, but this is only one part of the solution[6]. Including shipping in the ETS will not be enough to drive the technology revolution needed to achieve the IMO 2050 target (NB: 50% GHG reduction target compared to 2008 levels). An extension of the EU ETS should result in CO₂ reduction, limit carbon leakage, acceleration the transition towards clean fuels, and not hamper the competitive position of the EU market.



[6] Hydrogen Europe welcomes the vote in the European Parliament from 16 September 2020 to include shipping in the EU ETS.

- In addition, 50% of ETS revenues should be earmarked towards a fund such as the green ocean fund under the EU-ETS to finance innovation and first movers to ensure the uptake of energy-saving technologies on ships, bunkering/charging infrastructure for zero-carbon fuels/energy in European ports and subsidising the uptake of zero-carbon fuels by ships via carbon contracts for difference.
- Restructuring energy taxation by reducing fossil fuels subsidies, eliminating double taxation, granting fiscal rewards to those investing in clean energy technologies is central to establishing a robust system of carbon reduction.
- The ETD should ensure differentiated tax treatment for renewable and low-carbon fuels and applications that drive the EU's green transition. At the same time, it is imperative that measures reducing the fiscal burden on certain forms of energy assess the GHG reduction effect of those energy products, e.g., promoting electricity use in transport with no consideration of GHG intensity would hamper decarbonisation. As such, any measures should be technology-neutral and market-driven. In this context, potential amendments to the Excise Monitoring and Control System (EMCS) or the use of Guarantees of Origin / Sustainability certificates could be enacted.
- At the same time, the ETD should continue to allow the exemption of energy products and electricity used to produce electricity and electricity used to maintain the ability to produce electricity (art. 14.1a), taxable products used under fiscal control in the field of pilot projects for the technological development of more environmentally friendly products or in relation to fuels from renewable resources (art. 15.1a), electricity generated from fuel cells (art. 15.1b), energy products and electricity used for CHP generation (art. 15.1c), electricity produced from CHP generation (art. 15.1d), and ensure electrolyzers are also exempted.
- The production of hydrogen is an activity listed under Annex I to the EU ETS Directive. It covers all hydrogen production by steam methane reforming or partial oxidation exceeding a production capacity of 25 t/day. With artificially low prices for grey hydrogen provided by free allowances, companies receive no incentive to change to costlier yet climate-friendly alternatives such as blue or green hydrogen.

Enabling a carbon-neutral transport system

Revision of the Directive on the deployment of alternative fuels infrastructure (DAFI)

- Hydrogen should be a mandatory fuel on the list. Furthermore, the National Policy Frameworks submitted by the Member States should be binding while allowing for flexibility in how to achieve the targets.

- The specificity of infrastructure for heavy-duty vehicles (HDVs) must be considered. It is necessary to support hydrogen refuelling stations on the TEN-T Core network next to those at the logistics centres, depots as well as on urban nodes.
- The development of additional technical requirements and CEN/CENELEC standards would contribute to enabling interoperability when refuelling hydrogen-powered heavy-duty vehicles.
- A clear definition of “recharging or refuelling point accessible to the public” and extension of the scope of the definition are necessary while not hampering innovation.
- The scope of the Directive should also be extended to cover rail infrastructure, airport infrastructure for ground applications as well as infrastructure for ships to cover the needs of the maritime sector.
- The Directive should reflect the multi-faceted solutions that hydrogen technologies can bring to the transport sector’s decarbonisation, such as multipurpose hydrogen refuelling stations at strategic locations that could serve for different transport applications, e.g., at airports and ports.
- The DAFI should ensure close synergies with the revised proposals on Trans-European Networks for Energy (TEN-E) and Trans-European Networks for Transport, ensuring that hydrogen reaches transport corridors and refuelling stations from relevant production sources to points of end-use and consumption, whether along the TEN-T corridors or in ports or other industrial hubs.
- As for shipping, we call for the European Commission to adopt an integrated approach in EU funding instruments to make sure that new bunkering infrastructure, as well as technology on board and vessels, can be stimulated simultaneously, preferably in the same subsidy call. Only in this way can we overcome the chicken-and-egg problem and stimulate the commercial scale-up of low carbon fuels, clean energy, and energy carriers.
- We call for the establishment of a common regulatory framework to provide for the rapid expansion of hydrogen refuelling stations network across Europe. These hydrogen refuelling stations (HRS) will be used to supply hydrogen to small ships in ports, where these ships are being developed/used, and set the seeds for dedicated hydrogen infrastructure. There can be no chicken-and-egg dilemma: the deployment of infrastructure must occur alongside the deployment of ships.

Revision of the Regulation setting CO₂ emission performance standards for new passenger cars and for new light commercial vehicles.

- The EU should maintain the level of 2025 targets while strengthening the 2030 targets, provided the enabling framework conditions are in place, and a holistic approach is taken. As the Regulation covers different vehicle types, these differences should be reflected when it comes to targets, with dedicated sets for each vehicle category; in this respect, the key role of fuel cell electric vehicles for both segments should be acknowledged.
- Low carbon and renewable fuels have a central role to play, and this should be considered in the text by including a provision giving an option for manufacturers to take part in a voluntary crediting mechanism for renewable fuels of non-biological origin, which would be linked to an obligation to invest into zero-emission vehicles.
- Another key element of the proposal should target the overall system and resource efficiency: its role should be carefully analysed and recognised in the proposal, as the uptake of low and zero-emission vehicles will be severely hampered if not supported by an efficient system.
- Lastly, Hydrogen Europe calls for the allocation of emission premiums to upskilling, reskilling and hydrogen refuelling station deployment. We Europe needs technicians and automotive personnel to have all necessary skills and competencies to work on hydrogen vehicles since they have fundamental differences from internal combustion engine vehicles.

Fuel EU Maritime[7]

- In order to deliver a sustainable, scalable and cost-effective green transition for maritime transport, we call on the European Commission to stimulate within the framework of the FuelEU Maritime initiative the deployment of renewable hydrogen and green ammonia for shipping.
- Specific targets regarding the share of hydrogen and hydrogen-based fuels in the total fuel demand for the maritime sector can be set, leading to more certainty for producers, distributors and infrastructure providers and consumers. These targets should be coherent with any potential targets proposed within the context of RED revision to avoid duplication of efforts and incoherent legislation.
- Hydrogen Europe prefers goal-based performance requirements based on the carbon intensity of the energy used over mandating the use of specific sustainable alternative fuels.

[7] For more information regarding Hydrogen Europe's position and work in and around the maritime sector, please read our [Maritime Vision Paper](#).

- The solutions to be stimulated by FuelEU maritime need to be sought among technologies that can be both sustainable and scalable as opposed to 1st and 2nd generation biofuels.
- The supply of hydrogen-based fuels to the shipping sector needs to be incentivised significantly. In order to support its green energy transition and in order to be able to compete with advanced biofuels, we call for the introduction of a multiplier of at least 5 for sustainable e-fuels.
- Requirements on the share of specific sustainable fuels could be an interesting tool if they also include zero-carbon non-blendable fuels such as hydrogen and possibly ammonia.
- The minimum share of sustainable fuels should therefore not be limited to a blending requirement, as that would exclude some alternative fuels (like ammonia or hydrogen) and would therefore not be truly technologically neutral.
- The requirements should be defined on a fleet level and not at individual ship level – as that would enable to fulfil the obligation more smoothly by introducing a number of zero-emission vessels.

Fuel EU Aviation

- Hydrogen Europe welcomes the REFuelEU Aviation initiative designed to increase the uptake of Sustainable Aviation Fuels (SAF).
- The SAF blending mandate is clearly the strongest measure. Yet, at the same time, it should not be defined literally as a requirement to blend SAF with conventional fuels but rather as a requirement to introduce a certain number of sustainable fuels in a total volume of fuel produced or consumed on a fleet level. Therefore, setting a maximum GHG intensity threshold would be a better solution than a volume-based minimum share of SAF.
- The GHG intensity of SAF should be assessed using a complete lifecycle approach.
- Hydrogen Europe also suggests that the required SAF share should be defined in advance and for a sufficiently long time. This would help build investor confidence necessary to facilitate large-scale investments.
- The option of introducing a central auctioning mechanism whereby SAF producers would be invited by a central auctioning authority to bid at the lowest price to supply a particular volume of SAF to the aviation market over a certain period is also an interesting one. Synthetic fuels could also be accounted for via exact statistical transfer to profit from favourable production conditions in different regions.



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